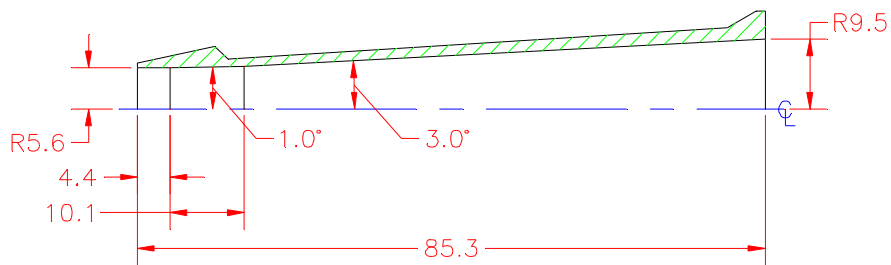
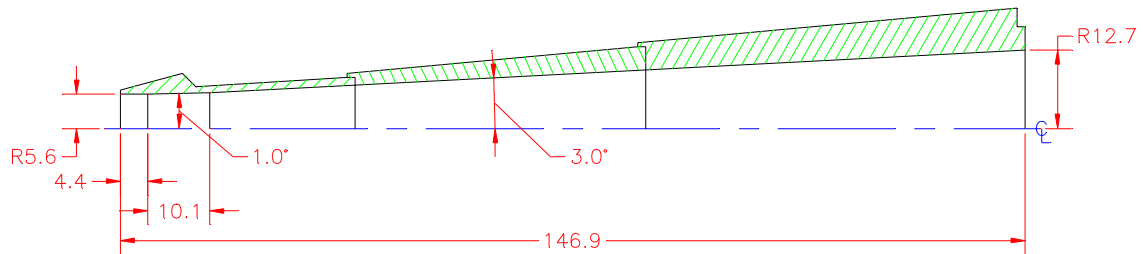


Figure 2.2.1. Solid model of the Electra LTI. The model is sliced down the middle of the LTI to expose the internal details.



Dimensions in millimeters

Figure 2.2.2. Cross-section view of the 2.3 area ratio porous diffuser used in the latter part of the NCAR Electra flight program.



Dimensions in mm

Figure 2.2.3. Cross-section view of the 3-segment PELTI porous diffuser.

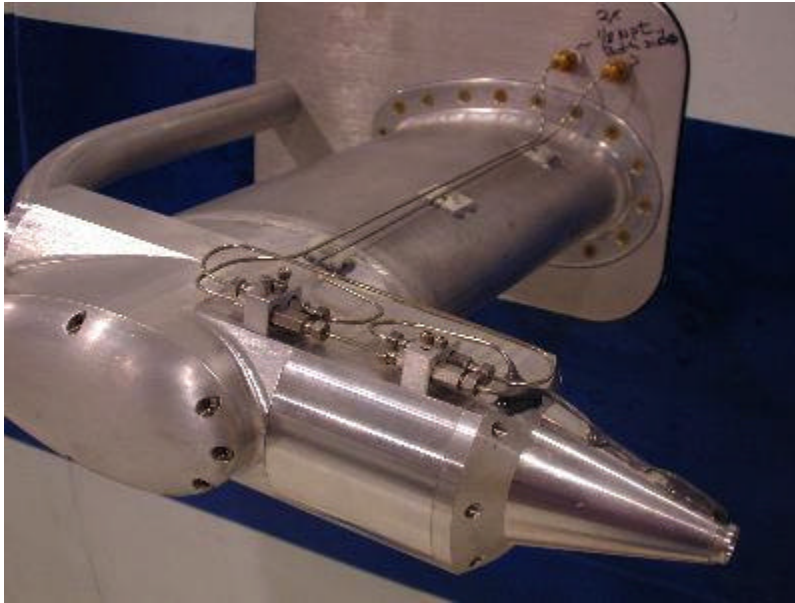


Figure 2.2.4. Photograph of the LTI installed on NCAR's C-130 aircraft just prior to the PELTI deployment. The sample flow goes out the tube in the upper left. The small tubes support a measurement of the pressure just inside the LTI tip.



Figure 2.2.5. Photograph of the NCAR C-130 aircraft showing the locations of the LTI (top edge of the blue stripe), TAS (far left just below blue stripe) and CAI (long metal tubes are the support structure for the CAI itself, in the center).

Figure 2.3.1 LTI manifolds (plumbing), plena, and instrumentation

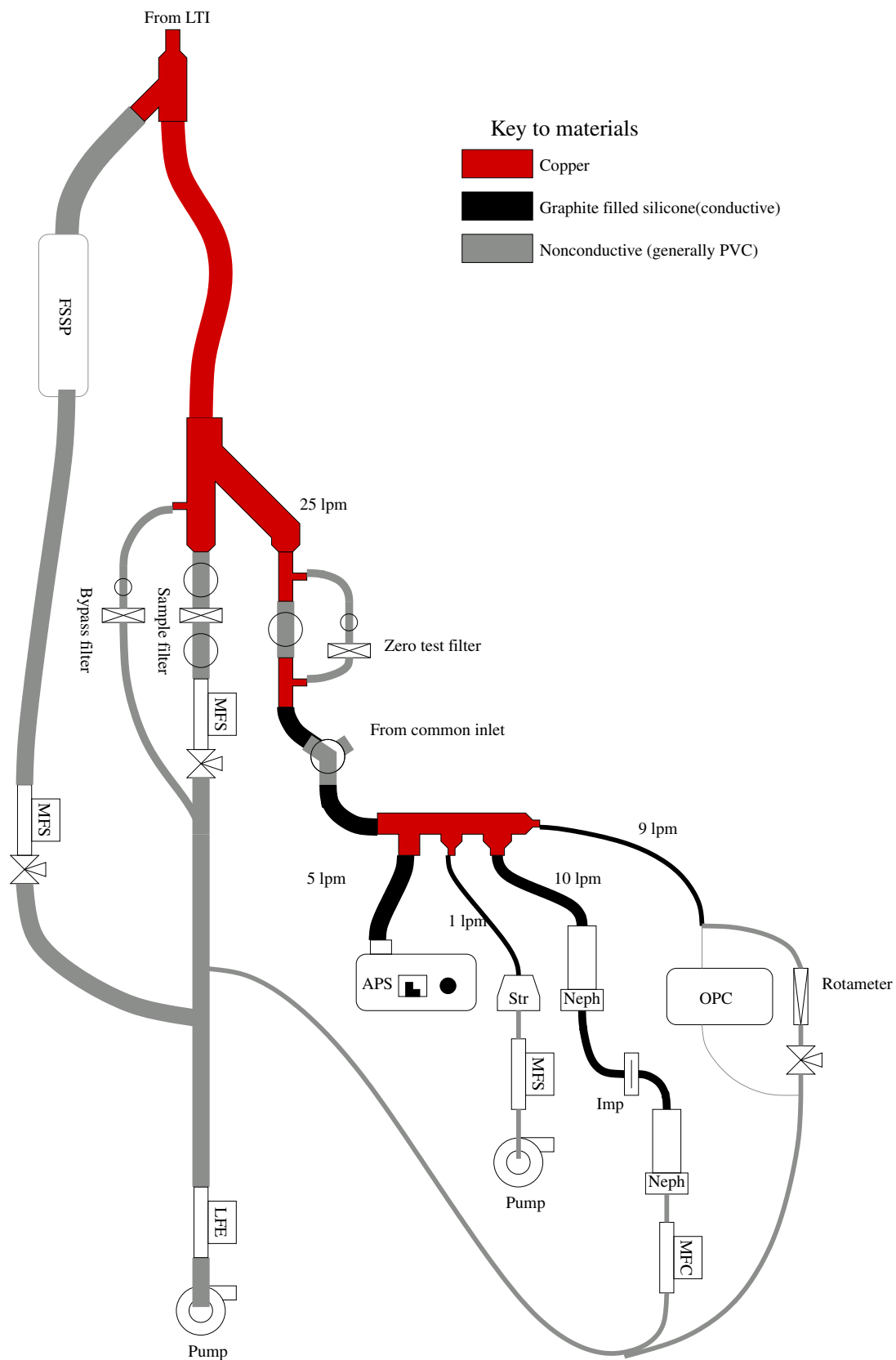
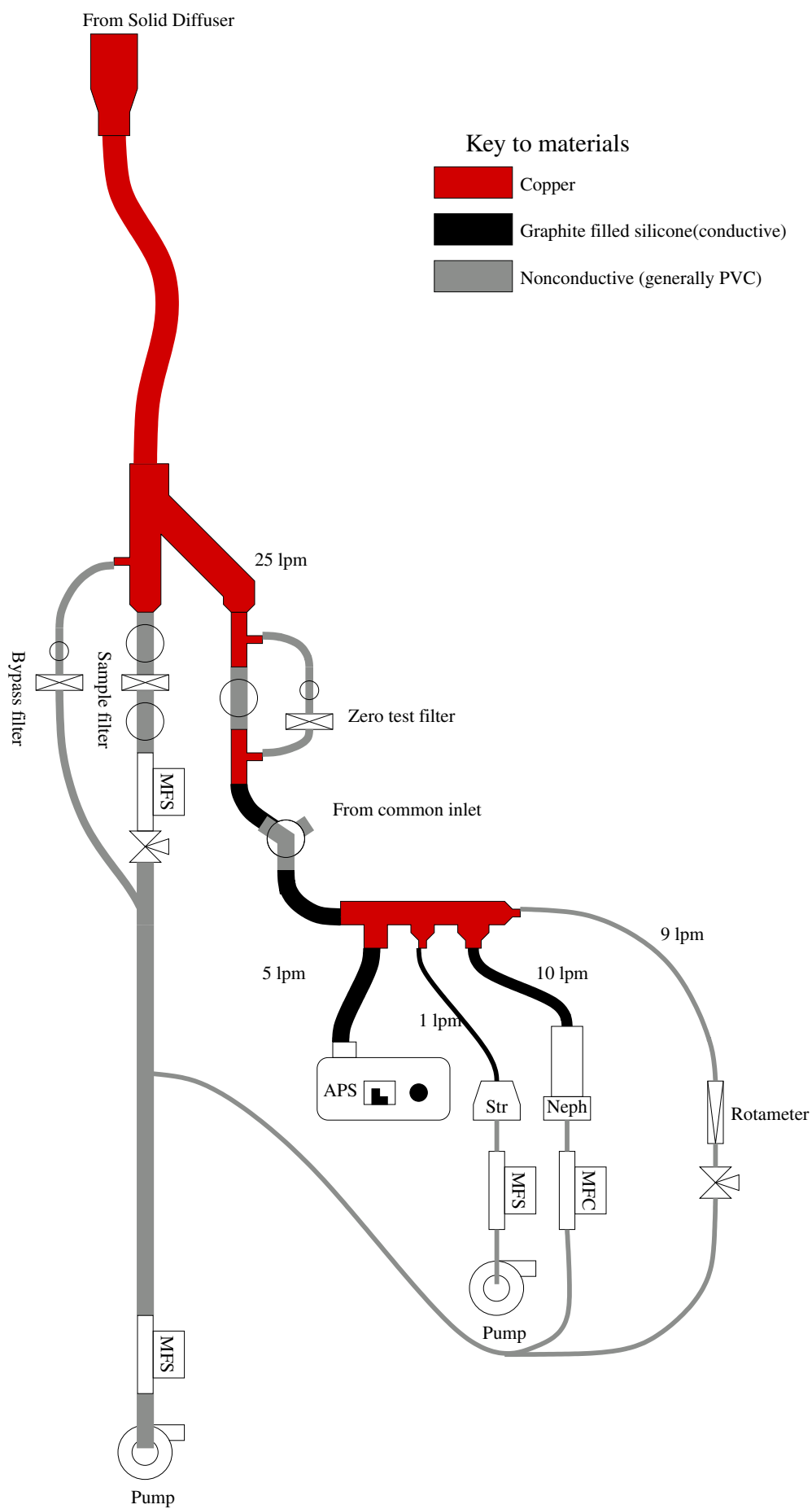
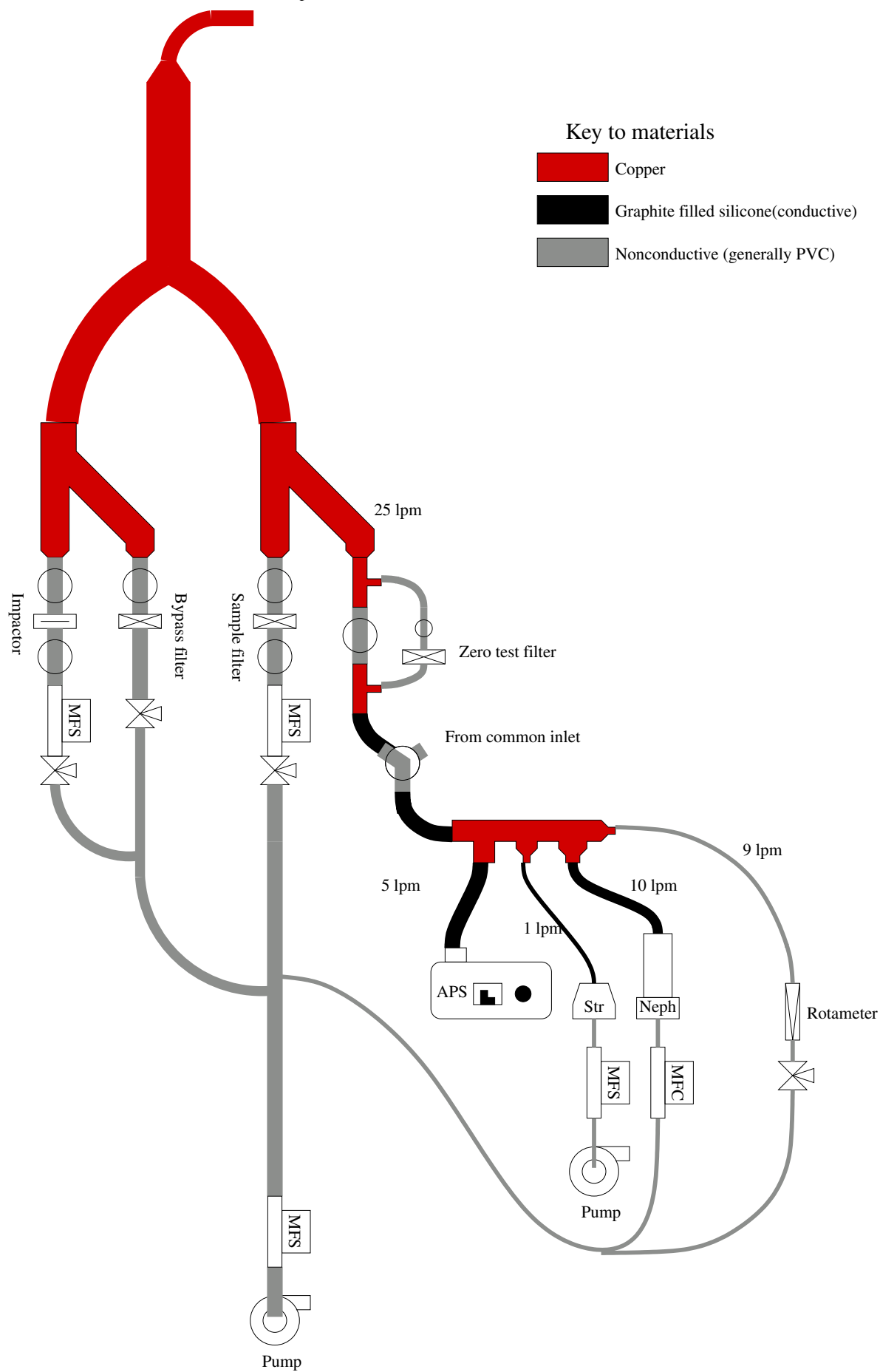


Figure 2.3.2 SD aerosol plumbing and instrumentation



2.3.3 CAI aerosol plumbing and instrumentation

From CAI pickoff tube



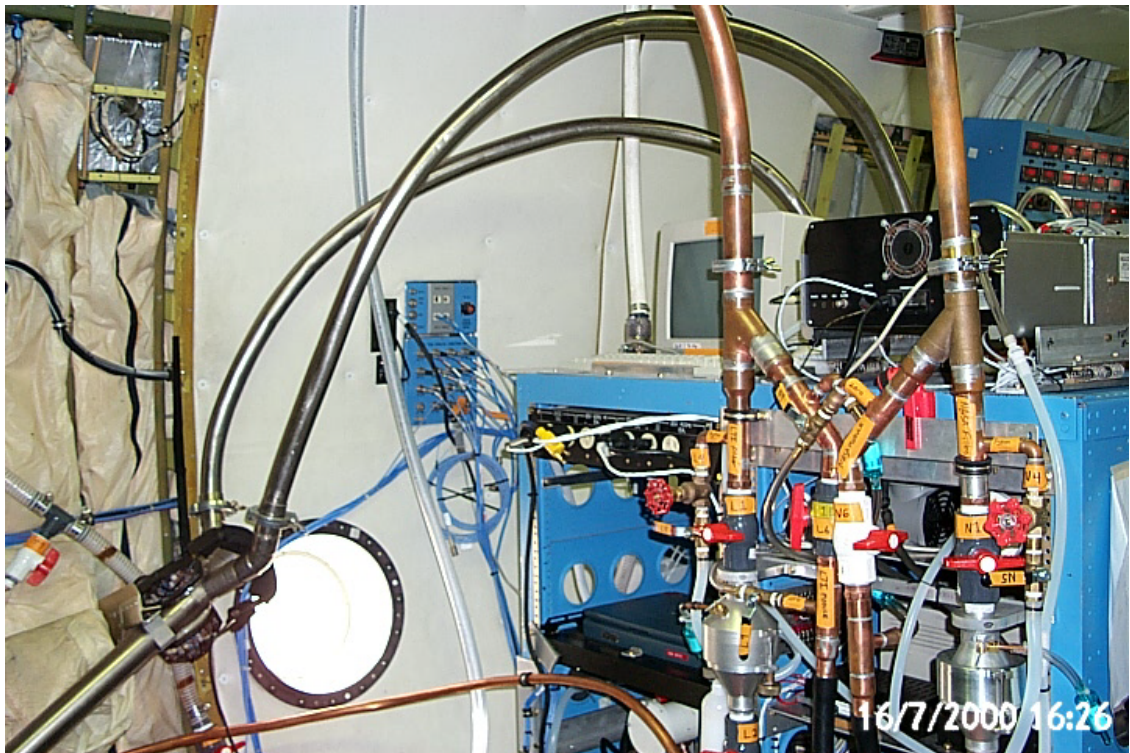


Figure 2.3.4 The nickel-plated arched tubes (the "brewery") deliver air from the CAI to the CAI filter and impactor, on the rear of the rack. Photo courtesy of J. Prospero

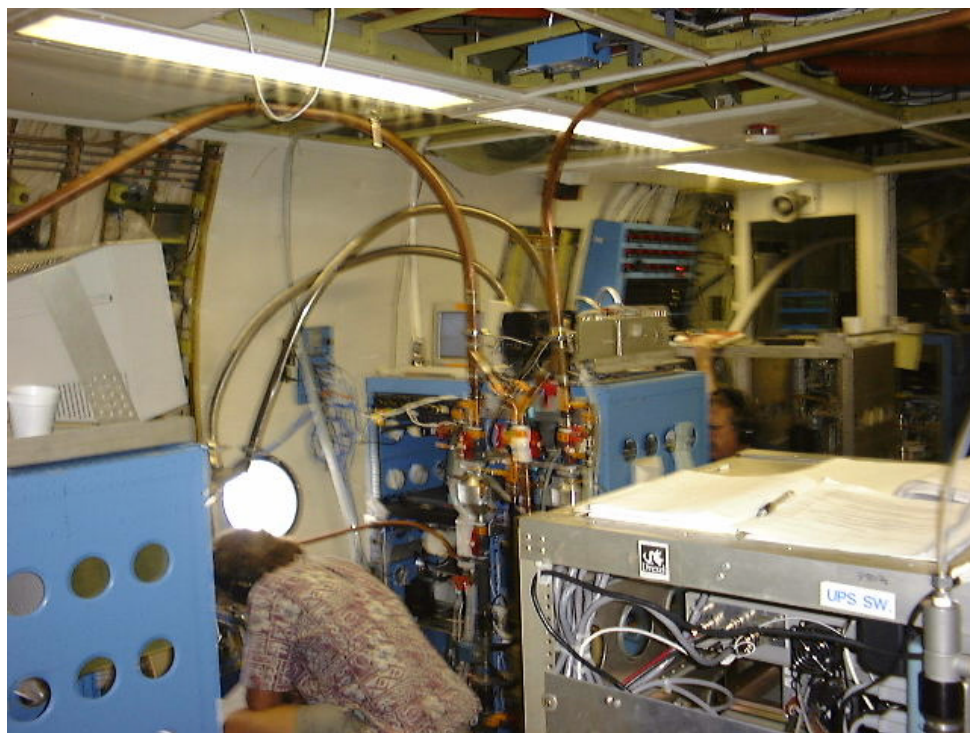


Figure 2.3.5 The copper tube arching in from the upper left delivers the LTI flow to the LTI filter and module. The tube crossing the ceiling to the right is from the SD.

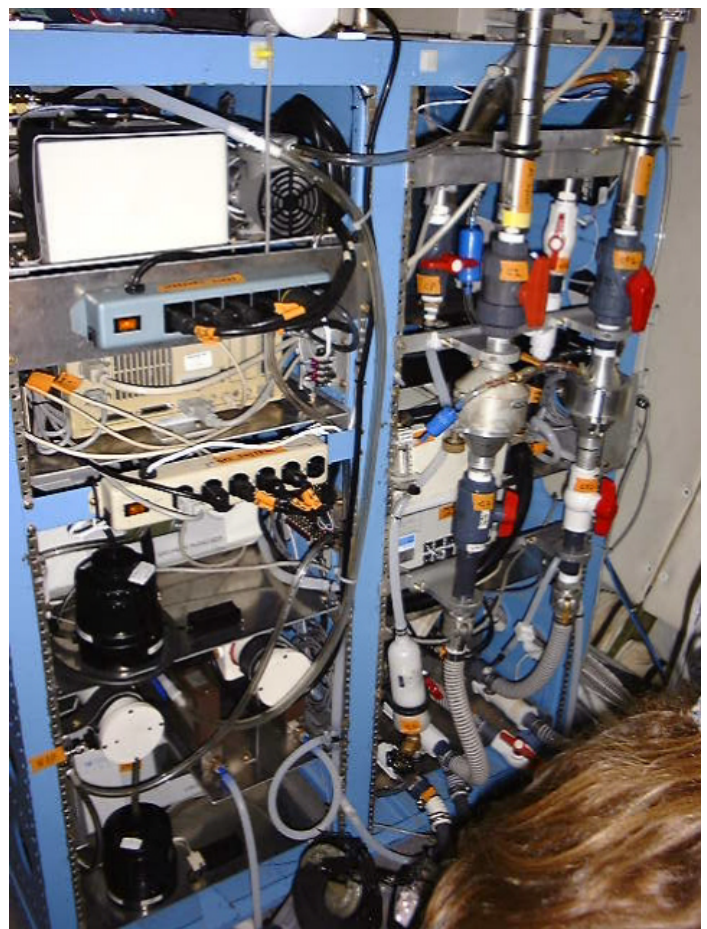
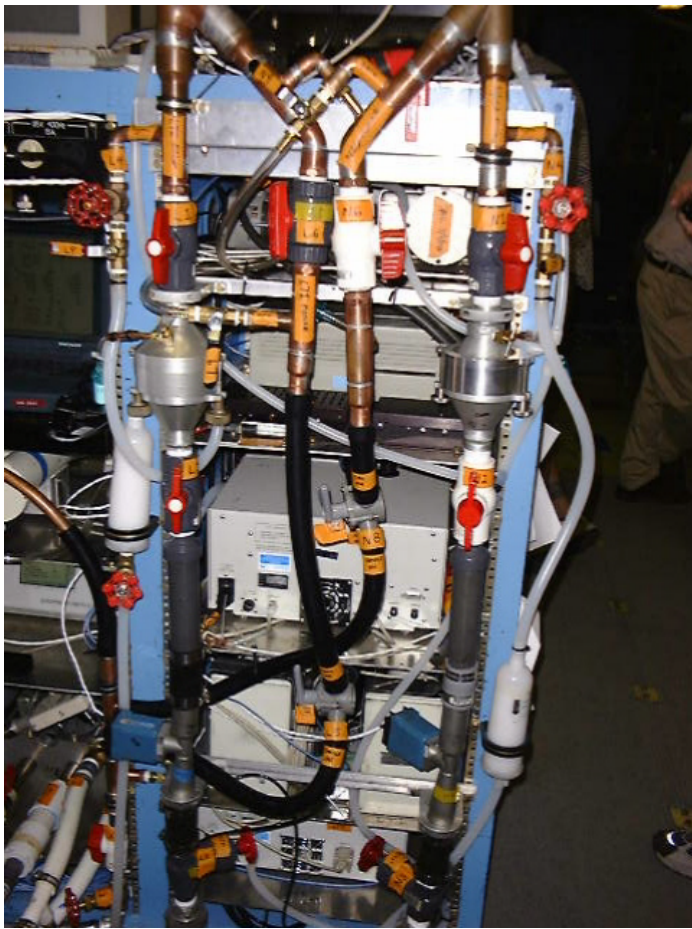


Figure 2.3.6 Main instrumentation rack, second from the front on the right side of the cabin.

Left Panel: Forward side of rack, showing plumbing and instruments. The rear of the SD APS can be seen on the middle shelf, with the LTI APS on the bottom shelf. Between them are the two nephelometers. The LTI and SD filter samples are on the face of the rack, immediately below the main delivery tubes. Parts of the CAI module can be seen on the left of the picture. The OPC was mounted atop this section of rack (out of the picture).

Right Panel: Rear side of rack, showing two streakers (black units lower left) and the CAI filter and impactor holders (middle right). Thermal mass flowmeters are located at the bottom of the right section.

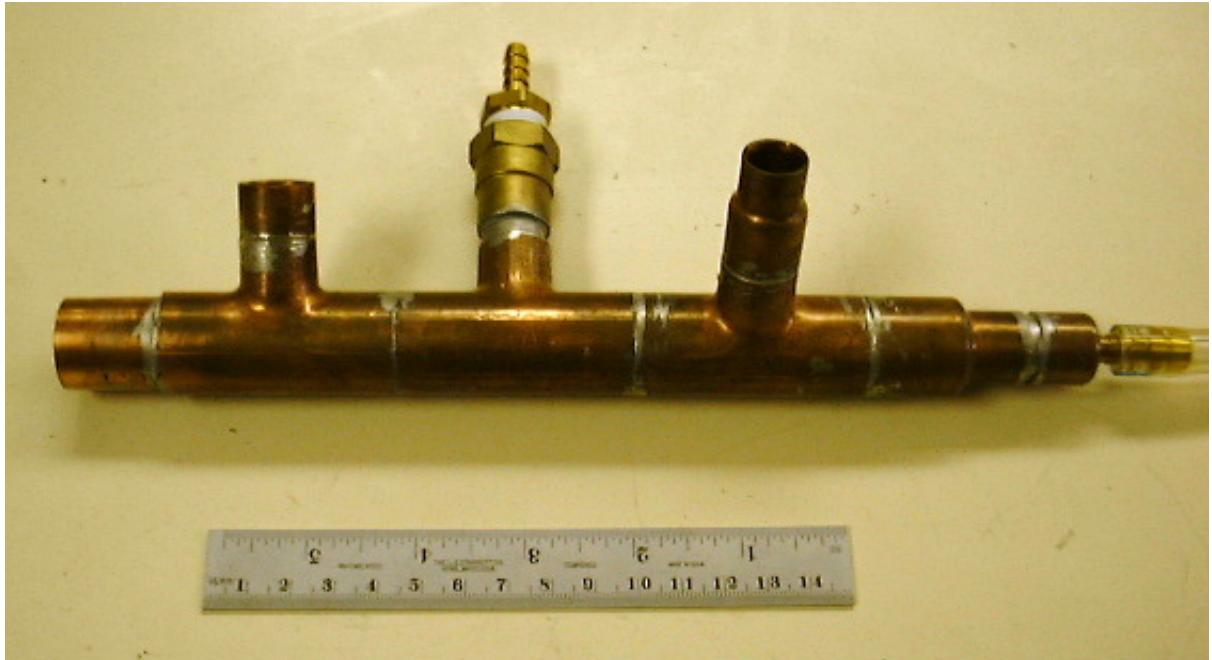


Figure 2.3.7 Each module derived its flows from a plenum like this. The flow entered from the left and then sent splits to the APS, streaker, nephelometer, and waste (or OPC in the case of the LTI).



Figure 2.3.8 Inside of the LTI mounting plate. The large clear tube on the left moved the suction flow to its LFE. The copper tube took the main flow back to the second rack, which housed the filters and modules. The white tube delivered LTI sample flow to the cabin FSSP, out of the picture to the lower left.

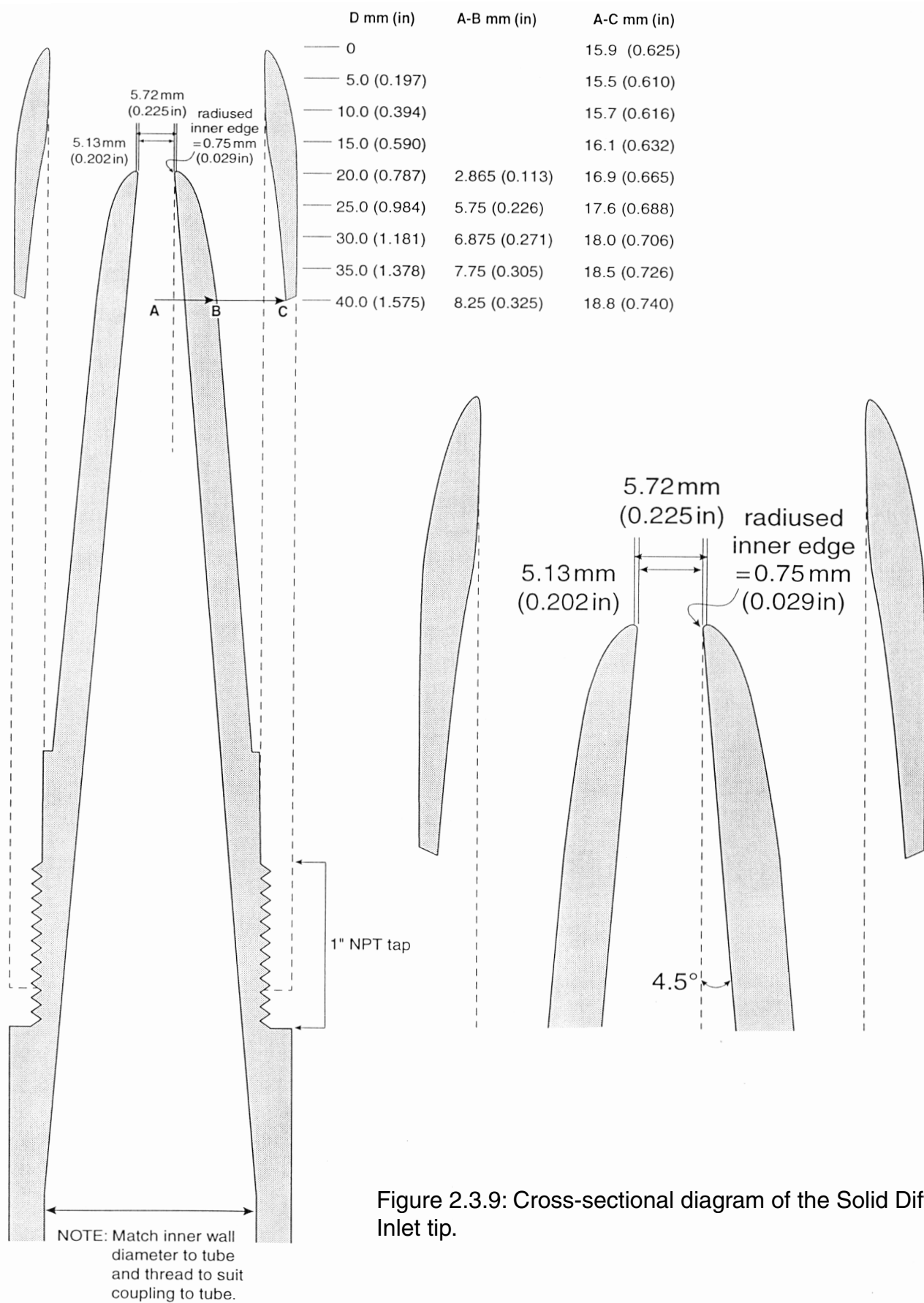


Figure 2.3.9: Cross-sectional diagram of the Solid Diffuser Inlet tip.